

10/540971
JC17 Rec'd PCT/PTO 27 JUN 2005

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of Whaley et al.

Serial number: unassigned Group Art Unit: unassigned
Attorney Docket Number: 01640393aa Examiner: unassigned
Filed: US national stage filed concurrently herewith

For: "***GENE ENCODING RESISTANCE TO ACETOLACTATE SYNTHASE-INHIBITING HERBICIDES***"

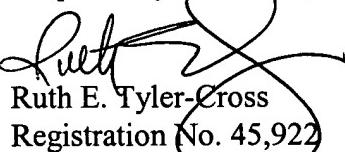
SUBMISSION OF SEQUENCE LISTING AND STATEMENT TO SUPPORT FILING IN
ACCORDANCE WITH 37 C.F.R. §§ 1.821-1.825

Commissioner for Patents
PO Box 1450
Alexandria VA 22313-1450
Mail Stop SEQUENCE

Dear Sir:

We enclose herein an initial computer readable form (diskette) and a paper copy of the sequence listings for the above-identified US national stage patent application. Also enclosed is a verified statement that the content of the paper and computer readable copies are the same and include no new matter. Applicant respectfully requests amendment of the present application by entry of the Sequence Listing.

Respectfully submitted,


Ruth E. Tyler-Cross
Registration No. 45,922

Whitham, Curtis & Christofferson
11491 Sunset Hills Road, Suite 340
Reston, VA 20190
Tel: 703-787-9400
FAX: 703-787-7557

10/540971

JC17 Rec'd PCT/PTO 27 JUN 2005

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of Whaley et al.

Serial number: unassigned

Attorney Docket Number: 01640393aa

Filed: US national stage filed concurrently herewith

For: "**GENE ENCODING RESISTANCE TO ACETOLACTATE SYNTHASE-INHIBITING HERBICIDES**"

STATEMENT TO SUPPORT FILING AND SUBMISSION IN ACCORDANCE WITH

37 C.F.R. §§ 1.821-1.825

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450
Mail Stop SEQUENCE

Dear Sir:

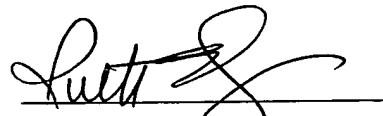
In connection with a Sequence Listing submitted concurrently herewith, the undersigned states that:

1. the submission, filed herewith in accordance with 37 C.F.R. § 1.821 (g), does not include new matter;
2. the content of the attached paper copy and the attached computer readable copy of the Sequence Listing, submitted in accordance with 37 C.F.R. § 1.821(c) and (e), respectively, are the same; and
3. all statements made herein of their own knowledge are true and that all statements made on information and belief are believed to be true; and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by

10/540971
JC17 Rec'd PCT/PCTO 27 JUN 2005

fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent resulting therefrom.

Respectfully submitted,



Ruth E. Tyler-Cross

Reg. No. 45,922

June 22, 2005
Date

10/540971

JC17 Rec'd PCT/PTO 27 JUN 2005

Sequence listing.ST25.txt
SEQUENCE LISTING

<110> Whaley, Cory M.
Wilson, Henry P.
Westwood, James H.

<120> Gene Encoding Resistance to Acetolactate Synthase-Inhibiting
Herbicides

<130> 01640393aa

<150> US 60/438,801
<151> 2003-01-09

<150> PCTUS04/00363
<151> 2004-01-09

<160> 8

<170> PatentIn version 3.2

<210> 1
<211> 1846
<212> DNA
<213> Amaranthus hybridus

<400> 1
tcatcatctt cttctcaatc acctaaacctt aaacccctt ccgtactat aactcaatca 60
ccttcgtctc tcaccgatga taaaccctct tctttgttt cccgatttag ccctgaagaa 120
cccagaaaag gttgcgtatgt tctcggtgaa gctcttgaac gtgaagggtgt taccgtatgtt 180
tttgcttacc ctgggtggagc atccatggaa attcatcaag ctcttactcg ttctaataatc 240
attagaaaatg ttcttcctcg acatgaacaa ggtggggttt tcgctgctga aggctacgct 300
cgtgctactg gacgcgttgg agtttgtatt gccacttctg gtccaggtgc tactaatctt 360
gtttctggtc ttgctgatgc acttcttgac tcagtccctc ttgtcgccat tactggcaa 420
gttccccggc gtatgattgg tactgatgct tttcaagaga ctccaattgt tgaggtaact 480
cgatccatta ccaagcataa ttatttggtg ttagatgttgg aggatattcc tagaattgtt 540
aaggaagctt tcttttagc taattctggt agacctggac ctgtttgtat tgatattcct 600
aaagatattc agcaacaatt agttgttccct aattgggaac agcccattaa attgggtggg 660
tatctttcta ggttgcctaa acccacttat tctgctaattg aagaggact tcttgatcaa 720
attgttaggt tagtgggtga gtctaaagaga cctgtgtgt atactggagg tgggtgtttg 780
aattcttagt aagaatttgag gaaatttgc gaattgacag gtattccgggt ggctagttact 840
ttaatgggtt tggggcttt ccctgtact gatgatttat ctcttcatat gttgggaatg 900
cacgggactg tgtacgcgaa ttacgcgggtt gataaggccg atttgggtct tgctttggg 960
gttaggttg atgaacgagt gactggtaag ctcgaggcgt ttgctagccg ggctaagatt 1020
gtgcacatcg atatcgattc tgctgaaatc gggagaata agcaacctca tgtgtcgatt 1080

Sequence listing.ST25.txt

tgtggtgatg ttaaagtggc attacagggg ttgaataaga ttttgaatc tagaaaagga	1140
aaggtaaat tggatttctc taattggagg gaggagttga atgagcagaa aaagaagttt	1200
ccttgagtt ttaagacttt cgggatgca attcctccgc aatacgccat tcaggttctt	1260
gacgagttga cgaagggcga tgcgggttga agtactggtg ttggcagca ccaaatgtgg	1320
gctgccaaat tctataagta ccgaaatcct cgccaaatggc tgacctcggg tgggttgggg	1380
gctatgggtt ttggtctacc agctgctatt ggagctgctg ttgctcgacc agatgcggtg	1440
gtttagaca ttgatgggg tggagtttt atcatgaatg ttcaagagtt ggctacgatt	1500
aggtagaga atctcccgt taaaatcatg ctcttgaaca atcaacattt aggtatggtt	1560
gttcaatggg aagatcgatt ttacaaagct aaccgggcac atacatacct cggaaatcct	1620
tccaattctt ccgaaatctt cccggatatg ctcaaatttgc tgaagcatg tggatatacca	1680
gcagcccggt ttaccaaggt gagcgattt aaggctgcaa ttcaaacaat gttggatact	1740
ccaggaccgt atctgctgga tgtaatcgta ccacatcagg agcatgtgct gcctatgatc	1800
cctagcggtg ccgccttcaa ggacaccata acagagggtg atggaa	1846

<210> 2

<211> 614

<212> PRT

<213> Amaranthus hybridus

<400> 2

Ser Ser Ser Ser Gln Ser Pro Lys Pro Lys Pro Pro Ser Ala Thr Ile			
1	5	10	15

Thr Gln Ser Pro Ser Ser Leu Thr Asp Asp Lys Pro Ser Ser Phe Val		
20	25	30

Ser Arg Phe Ser Pro Glu Glu Pro Arg Lys Gly Cys Asp Val Leu Val		
35	40	45

Glu Ala Leu Glu Arg Glu Gly Val Thr Asp Val Phe Ala Tyr Pro Gly		
50	55	60

Gly Ala Ser Met Glu Ile His Gln Ala Leu Thr Arg Ser Asn Ile Ile			
65	70	75	80

Arg Asn Val Leu Pro Arg His Glu Gln Gly Gly Val Phe Ala Ala Glu		
85	90	95

Gly Tyr Ala Arg Ala Thr Gly Arg Val Gly Val Cys Ile Ala Thr Ser		
100	105	110

Gly Pro Gly Ala Thr Asn Leu Val Ser Gly Leu Ala Asp Ala Leu Leu	
Page 2	

Sequence listing.ST25.txt

115

120

125

Asp Ser Val Pro Leu Val Ala Ile Thr Gly Gln Val Pro Arg Arg Met
130 135 140

Ile Gly Thr Asp Ala Phe Gln Glu Thr Pro Ile Val Glu Val Thr Arg
145 150 155 160

Ser Ile Thr Lys His Asn Tyr Leu Val Leu Asp Val Glu Asp Ile Pro
165 170 175

Arg Ile Val Lys Glu Ala Phe Phe Leu Ala Asn Ser Gly Arg Pro Gly
180 185 190

Pro Val Leu Ile Asp Ile Pro Lys Asp Ile Gln Gln Gln Leu Val Val
195 200 205

Pro Asn Trp Glu Gln Pro Ile Lys Leu Gly Gly Tyr Leu Ser Arg Leu
210 215 220

Pro Lys Pro Thr Tyr Ser Ala Asn Glu Glu Gly Leu Leu Asp Gln Ile
225 230 235 240

Val Arg Leu Val Gly Glu Ser Lys Arg Pro Val Leu Tyr Thr Gly Gly
245 250 255

Gly Cys Leu Asn Ser Ser Glu Glu Leu Arg Lys Phe Val Glu Leu Thr
260 265 270

Gly Ile Pro Val Ala Ser Thr Leu Met Gly Leu Gly Ala Phe Pro Cys
275 280 285

Thr Asp Asp Leu Ser Leu His Met Leu Gly Met His Gly Thr Val Tyr
290 295 300

Ala Asn Tyr Ala Val Asp Lys Ala Asp Leu Leu Leu Ala Phe Gly Val
305 310 315 320

Arg Phe Asp Glu Arg Val Thr Gly Lys Leu Glu Ala Phe Ala Ser Arg
325 330 335

Ala Lys Ile Val His Ile Asp Ile Asp Ser Ala Glu Ile Gly Lys Asn
340 345 350

Lys Gln Pro His Val Ser Ile Cys Gly Asp Val Lys Val Ala Leu Gln
355 360 365

Sequence listing.ST25.txt

Gly Leu Asn Lys Ile Leu Glu Ser Arg Lys Gly Lys Val Lys Leu Asp
370 375 380 385 390 395 400

Phe Ser Asn Trp Arg Glu Glu Leu Asn Glu Gln Lys Lys Lys Phe Pro
405 410 415 420 425 430 435 440 445

Leu Ser Phe Lys Thr Phe Gly Asp Ala Ile Pro Pro Gln Tyr Ala Ile
450 455 460 465 470 475 480 485 490 495

Gln Val Leu Asp Glu Leu Thr Lys Gly Asp Ala Val Val Ser Thr Gly
500 505 510 515 520 525 530 535 540 545 550 555 560

Val Gly Gln His Gln Met Trp Ala Ala Gln Phe Tyr Lys Tyr Arg Asn
565 570 575 580 585 590 595 600 605 610

Pro Arg Gln Trp Leu Thr Ser Gly Gly Leu Gly Ala Met Gly Phe Gly
615 620 625 630 635 640 645 650 655 660 665 670 675 680

Leu Pro Ala Ala Ile Gly Ala Ala Val Ala Arg Pro Asp Ala Val Val
685 690 695 700 705 710 715 720 725 730 735 740 745 750

Val Asp Ile Asp Gly Asp Gly Ser Phe Ile Met Asn Val Gln Glu Leu
755 760 765 770 775 780 785 790 795 800 805 810 815 820

Ala Thr Ile Arg Val Glu Asn Leu Pro Val Lys Ile Met Leu Leu Asn
825 830 835 840 845 850 855 860 865 870 875 880 885 890

Asn Gln His Leu Gly Met Val Val Gln Trp Glu Asp Arg Phe Tyr Lys
895 900 905 910 915 920 925 930 935 940 945 950 955 960

Ala Asn Arg Ala His Thr Tyr Leu Gly Asn Pro Ser Asn Ser Ser Glu
965 970 975 980 985 990 995 1000 1005 1010 1015 1020 1025 1030

Ile Phe Pro Asp Met Leu Lys Phe Ala Glu Ala Cys Asp Ile Pro Ala
1035 1040 1045 1050 1055 1060 1065 1070 1075 1080 1085 1090 1095 1100

Ala Arg Val Thr Lys Val Ser Asp Leu Arg Ala Ala Ile Gln Thr Met
1105 1110 1115 1120 1125 1130 1135 1140 1145 1150 1155 1160 1165 1170

Leu Asp Thr Pro Gly Pro Tyr Leu Leu Asp Val Ile Val Pro His Gln
1175 1180 1185 1190 1195 1200 1205 1210 1215 1220 1225 1230 1235 1240

Glu His Val Leu Pro Met Ile Pro Ser Gly Ala Ala Phe Lys Asp Thr
1245 1250 1255 1260 1265 1270 1275 1280 1285 1290 1295 1300 1305 1310

Ile Thr Glu Gly Asp Gly
1315 1320 1325 1330 1335 1340 1345 1350 1355 1360 1365 1370 1375 1380

Sequence listing.ST25.txt

<210> 3
<211> 1930
<212> DNA
<213> Amaranthus hybridus

<400> 3
tcatcatctt cttctcaatc acctaaacct aaacccctt ccgtactat aactcaatca 60
ccttcgtctc tcaccgatga taaaccctct tctttgttt cccgatttag ccctgaagaa 120
cccagaaaag gttgcgtatgt tctcgaa gctcttgaac gtgaagggtgt taccgtatgtt 180
tttgcttacc ctgggggagc atccatggaa attcatcaag ctcttactcg ttctaataatc 240
attagaaaatg ttcttcctcg acatgaacaa ggtgggggtt tcgctgctga aggctacgct 300
cgtgctactg gacgcgttgg agtttgtatt gccacttctg gtccagggtgc tactaatctt 360
gtttctggtc ttgctgatgc acttcttgac tcagtccctc ttgtcgccat tactgggcaa 420
gttccccggc gtatgattgg tactgatgct tttcaagaga ctccaattgt tgaggttaact 480
cgatccatta ccaagcataa ttatttggtg ttagatgtt aggatattcc tagaattgtt 540
aaggaagctt tcttttagc taattctggt agacctggac ctgtttgtat tgatattcct 600
aaagatattc agcaacaatt agttgttcct aattgggaac agccattaa attgggtggg 660
tatcttctta ggtgcctaa acccacttat tctgctaatt aagaggact tcttgatcaa 720
attgttaagggt tagtgggtga gtctaaagaga cctgtgtgt atactggagg tgggtgtttg 780
aattcttagt aagaatttgag gaaatttgc gaattgacag gtattccgggt ggctagttact 840
ttaatgggggt tgggggcttt cccttgtact gatgatttat ctcttcataat gttgggaatg 900
cacgggactg tgtacgcgaa ttacgcgggtt gataaggccg atttgggtct tgctttggg 960
gttaggttg atgatcgagt gactggtaag ctcgaggcgt ttgctagccg ggctaagatt 1020
gtgcacatcg atatcgattc tgctgaaatc gggagaata agcaacacta tgtgtcgatt 1080
tgtgggtatg taaaagtggc attacagggg ttgaataaga ttttggaaatc tagaaaagga 1140
aaggtgaaat tggatttctc taattggagg gaggagttga atgagcagaa aaagaagttt 1200
cctttgagtt ttaagacttt cggggatgca attcctccgc aatacgccat tcaggttctt 1260
gacgagttga cgaaggcgaa tgcgggttga agtactgggt ttggcagca ccaaattgtgg 1320
gctgccaaat tctataagta ccgaaatcct cgccaaatggc tgacccctcggg tgggttgggg 1380
gctatgggggt ttggtctacc agctgttatt ggagctgttgc ttgctcgacc agatgcgggt 1440
gtttagaca ttgatggggta tggagttttt atcatgaatg ttcaagagtt ggctacgatt 1500
aggtagaga atctcccggt taaaatcatg ctcttgaaca atcaacattt aggtatggtt 1560
gttcaatggg aagatcgatt ttacaaagct aaccgggcac atacataacct cgggaatcct 1620
tccaattctt ccgaaatctt cccggatatg ctcaaatttg ctgaagcatg tgatatacca 1680

Sequence listing.ST25.txt

gcagccgtg ttaccaagg	gagcgattt	agggctgcaa	ttcaaacaat	gttggatact	1740
ccaggaccgt atctgctgga	tgtatcgta	ccacatcagg	agcatgtgct	gcctatgatc	1800
ccttagcggtg ccgccttcaa	ggacaccata	acagagggtg	atggaagaag	ggcttattag	1860
ttggttggag atctttatag	aggagaagct	tttttgtatg	tatgttagta	gttccataaaa	1920
cttctatatt					1930

<210> 4
<211> 619
<212> PRT
<213> Amaranthus hybridus

<400> 4

Ser Ser Ser Ser Ser Gln Ser Pro Lys Pro Lys Pro Pro Ser Ala Thr
1 5 10 15

Ile Thr Gln Ser Pro Ser Ser Leu Thr Asp Asp Lys Pro Ser Ser Phe
20 25 30

Val Ser Arg Phe Ser Pro Glu Glu Pro Arg Lys Gly Cys Asp Val Leu
35 40 45

Val Glu Ala Leu Glu Arg Glu Gly Val Thr Asp Val Phe Ala Tyr Pro
50 55 60

Gly Gly Ala Ser Met Glu Ile His Gln Ala Leu Thr Arg Ser Asn Ile
65 70 75 80

Ile Arg Asn Val Leu Pro Arg His Glu Gln Gly Gly Val Phe Ala Ala
85 90 95

Glu Gly Tyr Ala Arg Ala Thr Gly Arg Val Gly Val Cys Ile Ala Thr
100 105 110

Ser Gly Pro Gly Ala Thr Asn Leu Val Ser Gly Leu Ala Asp Ala Leu
115 120 125

Asp Asp Ser Val Pro Leu Val Ala Ile Thr Gly Gln Val Pro Arg Arg
130 135 140

Met Ile Gly Thr Asp Ala Phe Gln Glu Thr Pro Ile Val Glu Val Thr
145 150 155 160

Arg Ser Ile Thr Lys His Asn Tyr Leu Val Leu Asp Val Glu Asp Ile
165 170 175

Pro Arg Ile Val Lys Glu Ala Phe Phe Leu Ala Asn Ser Gly Arg Pro
Page 6

Sequence listing.ST25.txt

180

185

190

Gly Pro Val Leu Ile Asp Ile Pro Lys Asp Ile Gln Gln Gln Leu Val
 195 200 205

Val Pro Asn Trp Glu Gln Pro Ile Lys Leu Gly Gly Tyr Leu Ser Arg
 210 215 220

Leu Pro Lys Pro Thr Tyr Ser Ala Asn Glu Glu Gly Leu Leu Asp Gln
 225 230 235 240

Ile Val Arg Leu Val Gly Glu Ser Lys Arg Pro Val Leu Tyr Thr Gly
 245 250 255

Gly Gly Cys Leu Asn Ser Ser Glu Glu Leu Arg Lys Phe Val Glu Leu
 260 265 270

Thr Gly Ile Pro Val Ala Ser Thr Leu Met Gly Leu Gly Ala Phe Pro
 275 280 285

Cys Thr Asp Asp Leu Ser Leu His Met Leu Gly Met His Gly Thr Val
 290 295 300

Tyr Ala Asn Tyr Ala Val Asp Lys Ala Asp Leu Leu Leu Ala Phe Gly
 305 310 315 320

Val Arg Phe Asp Asp Arg Val Thr Gly Lys Leu Glu Ala Phe Ala Ser
 325 330 335

Arg Ala Lys Ile Val His Ile Asp Ile Asp Ser Ala Glu Ile Gly Lys
 340 345 350

Asn Lys Gln Pro His Val Ser Ile Cys Gly Asp Val Lys Val Ala Leu
 355 360 365

Gln Gly Leu Asn Lys Ile Leu Glu Ser Arg Lys Gly Lys Val Lys Leu
 370 375 380

Asp Phe Ser Asn Trp Arg Glu Glu Leu Asn Glu Gln Lys Lys Lys Phe
 385 390 395 400

Pro Leu Ser Phe Lys Thr Phe Gly Asp Ala Ile Pro Pro Gln Tyr Ala
 405 410 415

Ile Gln Val Leu Asp Glu Leu Thr Lys Gly Asp Ala Val Val Ser Thr
 420 425 430

Sequence listing.ST25.txt

Gly Val Gly Gln His Gln Met Trp Ala Ala Gln Phe Tyr Lys Tyr Arg
435 440 445

Asn Pro Arg Gln Trp Leu Thr Ser Gly Gly Leu Gly Ala Met Gly Phe
450 455 460

Gly Leu Pro Ala Ala Ile Gly Ala Ala Val Ala Arg Pro Asp Ala Val
465 470 475 480

Val Val Asp Ile Asp Gly Asp Gly Ser Phe Ile Met Asn Val Gln Glu
485 490 495

Leu Ala Thr Ile Arg Val Glu Asn Leu Pro Val Lys Ile Met Leu Leu
500 505 510

Asn Asn Gln His Leu Gly Met Val Val Gln Trp Glu Asp Arg Phe Tyr
515 520 525

Lys Ala Asn Arg Ala His Thr Tyr Leu Gly Asn Pro Ser Asn Ser Ser
530 535 540

Glu Ile Phe Pro Asp Met Leu Lys Phe Ala Glu Ala Cys Asp Ile Pro
545 550 555 560

Ala Ala Arg Val Thr Lys Val Ser Asp Leu Arg Ala Ala Ile Gln Thr
565 570 575

Met Leu Asp Thr Pro Gly Pro Tyr Leu Leu Asp Val Ile Val Pro His
580 585 590

Gln Glu His Val Leu Pro Met Ile Pro Ser Gly Ala Ala Phe Lys Asp
595 600 605

Thr Ile Thr Glu Gly Asp Gly Arg Arg Ala Tyr
610 615

<210> 5
<211> 11
<212> PRT
<213> Amaranthus hybridus

<400> 5

Gly Val Arg Phe Asp Glu Arg Val Thr Gly Lys
1 5 10

<210> 6
<211> 11
<212> PRT
<213> Amaranthus hybridus

Sequence listing.ST25.txt

<400> 6

Gly Val Arg Phe Asp Asp Arg Val Thr Gly Lys
1 5 10

<210> 7
<211> 618
<212> PRT
<213> Amaranthus hybridus

<400> 7

Ser Ser Ser Ser Gln Ser Pro Lys Pro Lys Pro Pro Ser Ala Thr Ile
1 5 10 15

Thr Gln Ser Pro Ser Ser Leu Thr Asp Asp Lys Pro Ser Ser Phe Val
20 25 30

Ser Arg Phe Ser Pro Glu Glu Pro Arg Lys Gly Cys Asp Val Leu Val
35 40 45

Glu Ala Leu Glu Arg Glu Gly Val Thr Asp Val Phe Ala Tyr Pro Gly
50 55 60

Gly Ala Ser Met Glu Ile His Gln Ala Leu Thr Arg Ser Asn Ile Ile
65 70 75 80

Arg Asn Val Leu Pro Arg His Glu Gln Gly Val Phe Ala Ala Glu
85 90 95

Gly Tyr Ala Arg Ala Thr Gly Arg Val Gly Val Cys Ile Ala Thr Ser
100 105 110

Gly Pro Gly Ala Thr Asn Leu Val Ser Gly Leu Ala Asp Ala Leu Leu
115 120 125

Asp Ser Val Pro Leu Val Ala Ile Thr Gly Gln Val Pro Arg Arg Met
130 135 140

Ile Gly Thr Asp Ala Phe Gln Glu Thr Pro Ile Val Glu Val Thr Arg
145 150 155 160

Ser Ile Thr Lys His Asn Tyr Leu Val Leu Asp Val Glu Asp Ile Pro
165 170 175

Arg Ile Val Lys Glu Ala Phe Phe Leu Ala Asn Ser Gly Arg Pro Gly
180 185 190

Pro Val Leu Ile Asp Ile Pro Lys Asp Ile Gln Gln Gln Leu Val Val
Page 9

Sequence listing.ST25.txt
200 205

Pro Asn Trp Glu Gln Pro Ile Lys Leu Gly Gly Tyr Leu Ser Arg Leu
 210 215 220
 Pro Lys Pro Thr Tyr Ser Ala Asn Glu Glu Gly Leu Leu Asp Gln Ile
 225 230 235 240
 Val Arg Leu Val Gly Glu Ser Lys Arg Pro Val Leu Tyr Thr Gly Gly
 245 250 255
 Gly Cys Leu Asn Ser Ser Glu Glu Leu Arg Lys Phe Val Glu Leu Thr
 260 265 270
 Gly Ile Pro Val Ala Ser Thr Leu Met Gly Leu Gly Ala Phe Pro Cys
 275 280 285
 Thr Asp Asp Leu Ser Leu His Met Leu Gly Met His Gly Thr Val Tyr
 290 295 300
 Ala Asn Tyr Ala Val Asp Lys Ala Asp Leu Leu Leu Ala Phe Gly Val
 305 310 315 320
 Arg Phe Asp Glu Arg Val Thr Gly Lys Leu Glu Ala Phe Ala Ser Arg
 325 330 335
 Ala Lys Ile Val His Ile Asp Ile Asp Ser Ala Glu Ile Gly Lys Asn
 340 345 350
 Lys Gln Pro His Val Ser Ile Cys Gly Asp Val Lys Val Ala Leu Gln
 355 360 365
 Gly Leu Asn Lys Ile Leu Glu Ser Arg Lys Gly Val Lys Leu Asp
 370 375 380
 Phe Ser Asn Trp Arg Glu Glu Leu Asn Glu Gln Lys Lys Lys Phe Pro
 385 390 395 400
 Leu Ser Phe Lys Thr Phe Gly Asp Ala Ile Pro Pro Gln Tyr Ala Ile
 405 410 415
 Gln Val Leu Asp Glu Leu Thr Lys Gly Asp Ala Val Val Ser Thr Gly
 420 425 430
 Val Gly Gln His Gln Met Trp Ala Ala Gln Phe Tyr Lys Tyr Arg Asn
 435 440 445

Sequence listing.ST25.txt

Pro Arg Gln Trp Leu Thr Ser Gly Gly Leu Gly Ala Met Gly Phe Gly
450 455 460 465 470 475 480 485 490 495

Leu Pro Ala Ala Ile Gly Ala Ala Val Ala Arg Pro Asp Ala Val Val
465 470 475 480

Val Asp Ile Asp Gly Asp Gly Ser Phe Ile Met Asn Val Gln Glu Leu
485 490 495

Ala Thr Ile Arg Val Glu Asn Leu Pro Val Lys Ile Met Leu Leu Asn
500 505 510

Asn Gln His Leu Gly Met Val Val Gln Trp Glu Asp Arg Phe Tyr Lys
515 520 525

Ala Asn Arg Ala His Thr Tyr Leu Gly Asn Pro Ser Asn Ser Ser Glu
530 535 540

Ile Phe Pro Asp Met Leu Lys Phe Ala Glu Ala Cys Asp Ile Pro Ala
545 550 555 560

Ala Arg Val Thr Lys Val Ser Asp Leu Arg Ala Ala Ile Gln Thr Met
565 570 575

Leu Asp Thr Pro Gly Pro Tyr Leu Leu Asp Val Ile Val Pro His Gln
580 585 590

Glu His Val Leu Pro Met Ile Pro Ser Gly Ala Ala Phe Lys Asp Thr
595 600 605

Ile Thr Glu Gly Asp Gly Arg Arg Ala Tyr
610 615

<210> 8
<211> 618
<212> PRT
<213> Amaranthus hybridus

<400> 8

Ser Ser Ser Ser Gln Ser Pro Lys Pro Lys Pro Pro Ser Ala Thr Ile
1 5 10 15

Thr Gln Ser Pro Ser Ser Leu Thr Asp Asp Lys Pro Ser Ser Phe Val
20 25 30

Ser Arg Phe Ser Pro Glu Glu Pro Arg Lys Gly Cys Asp Val Leu Val
35 40 45

Sequence listing.ST25.txt

Glu Ala Leu Glu Arg Glu Gly Val Thr Asp Val Phe Ala Tyr Pro Gly
50 55 60

Gly Ala Ser Met Glu Ile His Gln Ala Leu Thr Arg Ser Asn Ile Ile
65 70 75 80

Arg Asn Val Leu Pro Arg His Glu Gln Gly Gly Val Phe Ala Ala Glu
85 90 95

Gly Tyr Ala Arg Ala Thr Gly Arg Val Gly Val Cys Ile Ala Thr Ser
100 105 110

Gly Pro Gly Ala Thr Asn Leu Val Ser Gly Leu Ala Asp Ala Leu Asp
115 120 125

Asp Ser Val Pro Leu Val Ala Ile Thr Gly Gln Val Pro Arg Arg Met
130 135 140

Ile Gly Thr Asp Ala Phe Gln Glu Thr Pro Ile Val Glu Val Thr Arg
145 150 155 160

Ser Ile Thr Lys His Asn Tyr Leu Val Leu Asp Val Glu Asp Ile Pro
165 170 175

Arg Ile Val Lys Glu Ala Phe Phe Leu Ala Asn Ser Gly Arg Pro Gly
180 185 190

Pro Val Leu Ile Asp Ile Pro Lys Asp Ile Gln Gln Gln Leu Val Val
195 200 205

Pro Asn Trp Glu Gln Pro Ile Lys Leu Gly Gly Tyr Leu Ser Arg Leu
210 215 220

Pro Lys Pro Thr Tyr Ser Ala Asn Glu Glu Gly Leu Leu Asp Gln Ile
225 230 235 240

Val Arg Leu Val Gly Glu Ser Lys Arg Pro Val Leu Tyr Thr Gly Gly
245 250 255

Gly Cys Leu Asn Ser Ser Glu Glu Leu Arg Lys Phe Val Glu Leu Thr
260 265 270

Gly Ile Pro Val Ala Ser Thr Leu Met Gly Leu Gly Ala Phe Pro Cys
275 280 285

Thr Asp Asp Leu Ser Leu His Met Leu Gly Met His Gly Thr Val Tyr
290 295 300

Sequence listing.ST25.txt

Ala Asn Tyr Ala Val Asp Lys Ala Asp Leu Leu Leu Ala Phe Gly Val
305 310 315 320

Arg Phe Asp Asp Arg Val Thr Gly Lys Leu Glu Ala Phe Ala Ser Arg
325 330 335

Ala Lys Ile Val His Ile Asp Ile Asp Ser Ala Glu Ile Gly Lys Asn
340 345 350

Lys Gln Pro His Val Ser Ile Cys Gly Asp Val Lys Val Ala Leu Gln
355 360 365

Gly Leu Asn Lys Ile Leu Glu Ser Arg Lys Gly Lys Val Lys Leu Asp
370 375 380

Phe Ser Asn Trp Arg Glu Glu Leu Asn Glu Gln Lys Lys Lys Phe Pro
385 390 395 400

Leu Ser Phe Lys Thr Phe Gly Asp Ala Ile Pro Pro Gln Tyr Ala Ile
405 410 415

Gln Val Leu Asp Glu Leu Thr Lys Gly Asp Ala Val Val Ser Thr Gly
420 425 430

Val Gly Gln His Gln Met Trp Ala Ala Gln Phe Tyr Lys Tyr Arg Asn
435 440 445

Pro Arg Gln Trp Leu Thr Ser Gly Gly Leu Gly Ala Met Gly Phe Gly
450 455 460

Leu Pro Ala Ala Ile Gly Ala Ala Val Ala Arg Pro Asp Ala Val Val
465 470 475 480

Val Asp Ile Asp Gly Asp Gly Ser Phe Ile Met Asn Val Gln Glu Leu
485 490 495

Ala Thr Ile Arg Val Glu Asn Leu Pro Val Lys Ile Met Leu Leu Asn
500 505 510

Asn Gln His Leu Gly Met Val Val Gln Trp Glu Asp Arg Phe Tyr Lys
515 520 525

Ala Asn Arg Ala His Thr Tyr Leu Gly Asn Pro Ser Asn Ser Ser Glu
530 535 540

Ile Phe Pro Asp Met Leu Lys Phe Ala Glu Ala Cys Asp Ile Pro Ala
545 550 555 560

Sequence listing.ST25.txt

Ala Arg Val Thr Lys Val Ser Asp Leu Arg Ala Ala Ile Gln Thr Met
565 570 575

Leu Asp Thr Pro Gly Pro Tyr Leu Leu Asp Val Ile Val Pro His Gln
580 585 590

Glu His Val Leu Pro Met Ile Pro Ser Gly Ala Ala Phe Lys Asp Thr
595 600 605

Ile Thr Glu Gly Asp Gly Arg Arg Ala Tyr
610 615